

WOLF CREEK GENERATING STATION

DOCKET NO: 50-482
FACILITY OPERATING LICENSE: NPF-42

ANNUAL OPERATING REPORT

Report No: 1

Report Period: March 11, 1985 to December 31, 1985

Submitted by:

Kansas Gas & Electric Company

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ANNUAL OPERATING REPORT

This report is being submitted in accordance with the requirements of Technical Specification 6.9.1.4 and contains the information required by Technical Specification 6.9.1.5. The format of this report is similar to that provided in Regulatory Position C.l.b. of Regulatory Guide 1.16, Revision 4, August 1975. Also included in this report is the information required by 10CFR 20.407. This reporting period includes the time between March 11, 1985 (receipt of facility operating license) through December 31, 1985.

1. SUMMARY OF OPERATING EXPERIENCE

Facility operating license NPF-32 was issued to Wolf Creek Generating Station on March 11, 1985, authorizing fuel load and plant testing up to five percent of full power. The unit achieved initial criticality on May 22, 1985. Facility license NPF-42 was issued on June 4, 1985, authorizing further testing and full power operation. The unit was initially synchronized to the grid on June 12, 1985. The Power Ascension Testing Program was completed and the unit was declared to be available for commercial service on September 3, 1985.

A summary of the major safety related maintenance activities during this reporting period is provided below. This information has previously been submitted in the Monthly Operating Reports for the months of March through December, 1985.

March - Replacement of the mechanical seal on centrifugal charging pump 'A', installation of the upper internals, positioning of the reactor vessel head and tensioning the studs, and installation of the Control Rod Drive Mechanism ductwork, cables and electrical connections. Several valves required repair due to body-to-bonnet leaks, valve operator problems, and valves leaking through.

April - Rework of the Power Operated Relief Valves to increase the clearances between the plugs and the cages and the replacement of the inboard oil seal of a centrifugal charging pump. Work was performed on the Emergency Diesel Generators including the performance of web deflection tests and inspection of the pillow block bearings.

May - Encapsulation of twenty small Handcock root isolation valves off the steam generators. These valves had body-to-bonnet leaks and packing leaks. Two feedwater valves required repair involving welding and machining in steam cut areas. One of the Main Steamline Isolation Valves required replacement of a solenoid valve and a hydraulic pump. The shroud welds on the generator portion of the Emergency Diesel Generators were inspected due to a concern for a possible generic problem. Some undercutting was discovered on one weld and was repaired.

June - Work on the Main Steamline Isolation Valves and replacement of some of the associated 4-way solenoid valves to resolve problems. Work was performed on several miscellaneous valves and flanges to eliminate leakage.

July - Construction of a test bench for testing the 4-way valves on the Main Steam Isolation Valves and Feedwater Isolation Valves, and the repair of oil leaks. Other activities included adjusting the pressure equalizing valve on the containment access hatch, repair of the jacket water heaters on the standby emergency diesel generators, and repair of hinge pin leakage on a Main Feedwater check valve.

August - Rebuild of Centrifugal Charging Pump "A" to replace a damaged shaft, repair of a pin hole leak in the flange material of an RTD bypass flow orifice manifold, replacement of unqualified terminal blocks on the Main Feedwater Isolation Valves and the Main Steamline Isolation Valves, and change out of the position indicator switches on the pressurizer safety valves.

September - Rebuild and reinstallation of the relief valve for the positive displacement pump. The application of a freeze seal in the line the relief valve is mounted on was required to accomplish this work.

October - Reassembly and testing of the Positive Displacement Charging Pump. The pump exhibited signs of excessive leakage, and further repairs were completed.

November - Replacement of a Reactor Coolant System flow transmitter, BB-FT-434; restoration of the Diesel Fire Pump to service and removal of the temporary fire pumps; and rework of containment mini-purge system valves on the supply and exhaust duct to resolve leakage problems.

December - Performance of semi-annual maintenance of the reactor trip breakers and the semi-annual oil change on Centrifugal Charging Pump "A". In addition, oil leakage on both Centrifugal Charging Pumps "A" and "B" was corrected.

2. SUMMARY OF OUTAGES AND FORCED POWER REDUCTIONS

Provided below is a summary of the outages and significant load reductions which occurred between June 12, 1985, (initial electricity date) and December 31, 1985. During the period of June 12, 1985, through September 3, 1985 (commercial operation date), the unit operated for significant periods of time at reduced power levels in support of the Power Ascension Testing Program. Details of load reductions during this time period were provided in the Cycle 1 Startup Report. The majority of information has previously been submitted in the Monthly Operating Reports for June through December, 1985. References to previously submitted Licensee Event Reports are included in parenthesis where applicable.

1. Outage Start Date: 06/12/85 Completion Date: 06/13/85
Type: Forced Duration: 6.5 hours
Reason: Investigated problems with turbine load limiting circuitry.
2. Outage Start Date: 06/13/85 Completion Date: 06/13/85
Type: Forced Duration: 0.6 hours
Reason: Further investigation of turbine load limiting circuitry.

3. Outage Start Date: 06/13/85 Completion Date: 06/14/85
Type: Forced Duration: 26.7 hours
Reason: Unit taken off-line due to turbine vibration. A reactor trip due to a Main Feedwater Pump trip occurred during this outage. Subsequent investigations and monitoring of the Main Feedwater Pump failed to identify the cause of the pump trip. (Licensee Event Report 85-041-00).
4. Outage Start Date: 06/14/85 Completion Date: 06/14/85
Type: Forced Duration: 7.0 hours
Reason: Turbine trip due to insufficient reactor power to support turbine loading. The nuclear instrumentation channels were adjusted conservatively high leading to an erroneously high indication of reactor power. The nuclear instrumentation was subsequently calibrated at the 30 percent power testing plateau. (Licensee Event Report 85-044-00).
5. Outage Start Date: 06/17/85 Completion Date: 06/17/85
Type: Scheduled Duration: 1.7 hours
Reason: Manual turbine trip per Power Ascension Testing Program.
6. Outage Start Date: 06/23/85 Completion Date: 06/25/85
Type: Forced Duration: 39.0 hours
Reason: Reactor tripped due to the inadvertent opening of the reactor trip breakers during surveillance testing. (Licensee Event Report 85-045-00). A second reactor trip occurred during this outage due to feedwater check valve leakage. An allowable leak rate was determined and a program was developed to monitor this leakage. The operating procedure was revised to prevent recurrence of this situation. (Licensee Event Report 85-046-00).
7. Outage Start Date: 06/29/85 Completion Date: 07/05/85
Type: Scheduled Duration: 144.1 hours
Reason: Manually tripped the reactor per Power Ascension Testing Program. This test was utilized to demonstrate the operability of the Auxiliary Shutdown Panel.

8. Outage Start Date: 07/09/85 Completion Date: 07/13/85

Type: Forced Duration: 90.9 hours

Reason: Reactor trip due to feedwater control problem during Startup Test Program transient testing. A test recorder induced a false feedwater control signal. (Licensee Event Report 85-049-01). Two subsequent reactor trips occurred during this shutdown. On July 11, 1985, while reactor power was being manually reduced, an intermediate range high flux reactor trip occurred. The intermediate range high flux trip setpoint had been set at 15.5 percent reactor power to provide significant conservatism during the early phases of power ascension testing. This setpoint was adjusted to approximately 20 percent power (allowable setpoint is 25 percent power). During this event, problems with feedwater control were experienced, and plant operating procedures were revised and the feedwater control system was fine-tuned prior to unit restart. On July 10, 1985, a reactor trip occurred due to low-low Steam Generator level. Subsequent investigation revealed that the Main Feedwater Control Valve positioner for "B" Steam Generator was maintaining the valve approximately 25 percent open while the valve should have been closed. This allowed "B" Steam Generator to reach the high level setpoint, resulting in a Feedwater Isolation. Subsequently the low-low level setpoint was reached in Steam Generator "C" before reactor power could be reduced to be consistent with auxiliary feedwater flow, resulting in the reactor trip. The positioner for the "B" Main Feedwater Control Valve was recalibrated and verified to be functioning properly prior to unit restart. (Licensee Event Reports 85-042-00 and 85-050-00).

9. Outage Start Date: 07/15/85 Completion Date: 07/16/85

Type: Scheduled Duration: 11.3 hours

Reason: Reactor trip to test negative rate trip circuitry and analyze plant performance per the Power Ascension Testing Program.

10. Outage Start Date: 07/23/85 Completion Date: 07/23/85

Type: Forced Duration: 10.8 hours

Reason: Reactor tripped due to instrument power supply failure resulting in a loss of control power to a Main Feedwater Pump. The cause of the event was failure of a wire supplying power to a 120 volt instrument AC distribution panel. The wire failure was attributed to a faulty crimped connection which was repaired. (Licensee Event Report 85-054-00).

11. Outage Start Date: 07/31/85 Completion Date: 08/01/85
Type: Forced Duration: 38.3 hours
Reason: Reactor tripped due to a failure of a power range nuclear instrumentation channel while a second channel was under test. The failure of the nuclear instrumentation channel was a result of internal arcing in its power supply. The power supply was replaced and the original returned to the vendor for evaluation. (Licensee Event Report 85-058-00).
12. Outage Start Date: 08/07/85 Completion Date: 08/07/85
Type: Forced Duration: 15.6 hours
Reason: Unit trip occurred due to Hi-Hi level in Moisture Separator Reheater drain tank. It was concluded that the drain tank level controller had malfunctioned leading to the high level condition without indication in the Control Room. Adjustments were made to the controller and the unit returned to power operation. (Licensee Event Report 85-060-00).
13. Load Reduction Start Date: 08/12/85 Completion Date: 08/21/85
Type: Forced Duration: 218.5 hours
Reason: While at full power, high vibration on Main Feedwater Pump "B" developed. A load reduction to approximately 60 percent power was commenced to allow the pump to be secured. The pump was repaired and returned to service on August 20.
14. Outage Start Date: 08/28/85 Completion Date: 09/03/85
Type: Scheduled Duration: 140.0 hours
Reason: Unit was manually tripped from 100 percent power as the final test in the Power Ascension Testing Program. One Reactor trip occurred during this outage. While starting up the unit, the use of unpreheated feedwater, amplifying the "shrink" and "swell" characteristics of the Steam Generators, ultimately led to a low-low water level in the Steam Generator. Procedures were revised to provide an alternate method of feedwater preheating. (Licensee Event Report 85-064-00). At the conclusion of this outage, the unit was declared available for commercial operation.
15. Load Reduction Start Date: 09/03/85 Completion Date: 09/03/85
Type: Forced Duration: 20.1 hours
Reason: Unit was maintained at approximately 30 percent power due to Steam Generator chemistry being out of specification. The rate of Steam Generator Blowdown was increased, and power ascension was resumed at approximately 2120 CDT.

16. Outage Start Date: 09/05/85 Completion Date: 09/05/85
Type: Forced Duration: 12.1 hours
Reason: Unit tripped due to low Electro-Hydraulic Control system fluid pressure as a result of a faulty relief valve and drifting pressure switch settings. The relief valve was rebuilt and pressure switches were recalibrated. The periodic recalibration of these pressure switches was added to the preventative maintenance program. (Licensee Event Report 85-065-00).
17. Outage Start Date: 09/23/85 Completion Date: 09/23/85
Type: Forced Duration: 16.9 hours
Reason: Reactor tripped due to Lo-Lo Steam Generator level resulting from a failure of a controller card for the Main Feedwater Control Valve for that Steam Generator. The controller card was replaced and functionally tested satisfactorily and the unit was returned to power operation. (Licensee Event Report 85-067-00)
18. Load Reduction Start Date: 09/27/85 Completion Date 09/27/85
Type: Forced Duration: 10.0 hours
Reason: While at full power, an auto Turbine runback occurred due to high water temperature in the stator cooling system. Generator output stabilized at approximately 20 percent load. The cause of the high temperature was the failure of a controller for the temperature control valve. Once repairs were complete, the unit returned to full power operation.
19. Outage Start Date: 10/07/85 Completion Date: 10/10/85
Type: Forced Duration: 60.0 hours
Reason: Reactor was manually tripped due to reduced circulating water flow caused by a buildup of plant material on the circulating water traveling screens. Several individual screen assemblies buckled and one traveling screen assembly collapsed. The screens (except the one which collapsed) were repaired and returned to service shortly after the event. The unit returned to power operation on October 9 at a reduced reactor power (approximately 90 percent) since repairs to the collapsed screen prevented operation of one of the circulating water pumps. Methods of controlling submerged plant growth are being evaluated. (Licensee Event Report 85-069-00).

20. Outage Start Date: 10/10/85 Completion Date: 10/10/85

Type: Forced Duration: 19.0 hours

Reason: Reactor tripped due to Steam Generator level swings while increasing unit power. This event was a result of allowing insufficient time for Steam Generator level stabilization between adjustments of the Feedwater Control Valves. The controlling procedure was revised to preclude recurrence. (Licensee Event Report 85-072-00). Power was limited to approximately 90 percent until October 26, when repairs to the collapsed circulating water screen were completed.

21. Load Reduction Start Date: 12/04/85 Completion Date: 12/05/85

Type: Forced Duration: 28.0 hours

Reason: Power reduction due to Axial Flux Difference drifting outside the target band as a result of immovable Control Rods. The Rod Control System malfunction was due to two defective chips on a supervisory buffer memory card in the rod control logic cabinet. The card was replaced, and the Control Rods returned to operable status on December 4. The unit remained at a reduced power level until December 5 due to Axial Flux Difference cumulative penalty deviation time. (Licensee Event Report 85-079-00).

3. EXPOSURE INFORMATION

A. NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION REPORT - 1985

WORK & JOB FUNCTION	NUMBER OF PERSONNEL (>100 mrem)			TOTAL MAN-REM		
	UTILITY	STATION	CONTRACT	UTILITY	STATION	CONTRACT
REACTOR OPERATIONS & SURVEILLANCE						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	.178	.055
OPERATIONS	0	0	0	0.000	.164	.025
HEALTH PHYSICS & LAB	0	4	8	0.000	1.015	2.622
SUPERVISORY & OFFICE STAFF	0	0	0	.005	.066	.019
ENGINEERING STAFF	0	0	0	.003	.046	.079
ROUTINE PLANT MAINTENANCE						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	.472	.567
OPERATIONS	0	0	0	0.000	.056	0.000
HEALTH PHYSICS & LAB	0	0	0	0.000	.217	.398
SUPERVISORY & OFFICE STAFF	0	0	0	0.000	.070	.077
ENGINEERING STAFF	0	0	0	0.000	.091	.058
INSERVICE INSPECTION						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	.118	.190
OPERATIONS	0	0	0	0.000	.011	.005
HEALTH PHYSICS & LAB	0	0	0	0.000	0.000	.011
SUPERVISORY & OFFICE STAFF	0	0	0	.005	.079	.050
ENGINEERING STAFF	0	0	0	.003	.038	.005
SPECIAL PLANT MAINTENANCE						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	.084	.059
OPERATIONS	0	0	0	0.000	.007	0.000
HEALTH PHYSICS & LAB	0	0	0	0.000	.048	.093
SUPERVISORY & OFFICE STAFF	0	0	0	0.000	.007	.006
ENGINEERING STAFF	0	0	0	0.000	.005	0.000
WASTE PROCESSING						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	.017	.022
OPERATIONS	0	0	0	0.000	.004	0.000
HEALTH PHYSICS & LAB	0	0	0	0.000	.025	.019
SUPERVISORY & OFFICE STAFF	0	0	0	0.000	0.000	0.000
ENGINEERING STAFF	0	0	0	0.000	0.000	0.000
REFUELING						
MAINTENANCE & CONSTRUCTION	0	0	0	0.000	0.000	0.000
OPERATIONS	0	0	0	0.000	0.000	0.000
HEALTH PHYSICS & LAB	0	0	0	0.000	0.000	0.000
SUPERVISORY & OFFICE STAFF	0	0	0	0.000	0.000	0.000
ENGINEERING STAFF	0	0	0	0.000	0.000	0.000
TOTALS						
MAINTENANCE & CONSTRUCTION	0	0	5	0.000	.868	.892
OPERATIONS	0	1	0	0.000	.242	.030
HEALTH PHYSICS & LAB	0	4	10	0.000	1.305	3.143
SUPERVISORY & OFFICE STAFF	0	0	1	.011	.221	.153
ENGINEERING STAFF	0	0	0	.006	.180	.142
GRAND TOTALS	0	5	16	.017	2.816	4.360

B. PERSONNEL MONITORING REPORT

1. In 1985, 1574 individuals were provided personnel monitoring devices. This information is provided in accordance with paragraph (a)(2) of 10CFR 20.407. This total includes the number of individuals required to be reported under paragraph (a)(1) of this section.
2. Below is a statistical summary report of the personnel monitoring information recorded for individuals for whom personnel monitoring was provided in 1985 in accordance with the requirements of 10CFR 20.407(b).

Estimated whole body exposure range (rems)	Number of individuals in each range
No measurable exposure.....	1404
Measurable exposure less than 0.1.....	155
0.1 to 0.25.....	11
0.25 to 0.5.....	4
0.5 to 0.75.....	0
0.75 to 1.....	0
1 to 2.....	0
2 to 3.....	0
3 to 4.....	0
4 to 5.....	0
5 to 6.....	0
6 to 7.....	0
7 to 8.....	0
8 to 9.....	0
9 to 10.....	0
10 to 11.....	0
11 to 12.....	0
12+.....	0

C. SOURCE OF DATA

The information provided in Section 3.A is based on estimated exposures obtained from Pocket Ionization Chamber readings. The information provided in Section 3.B.2 is obtained from Thermal Luminescent Dosimeter (TLD) readings which is the official record of exposures. There is a discrepancy in the total number of personnel having received greater than 100 mrem exposure during 1985 in the two sections. This discrepancy resulted from the two different sources of exposure information utilized to determine the totals.

4. INDICATIONS OF FAILED FUEL

During 1985, there were no indications of failed fuel. No examinations of irradiated fuel have been performed.

5. CHALLENGES TO THE PORV'S AND SAFETY VALVES

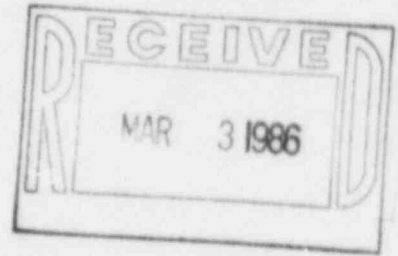
On April 28, 1985, a Safety Injection and Main Steam Isolation occurred. The initiating signal was low steamline pressure on Steam Generator "D". At the time of the event, the reactor was in Mode 3, Hot Standby, prior to initial criticality. Testing of the Main Steam Isolation Valves (MSIV's) was in progress, and all four MSIV's were closed. The MSIV bypass valves had just been reopened when an operator initiated reopening one MSIV. The Safety Injection and Main Steam Isolation occurred shortly thereafter due to low steamline pressure. Subsequent investigations concluded that the MSIV had been opened prior to the equalization of pressure through the MSIV bypasses. The rate of the resultant decrease in steamline pressure (10-15 psig) was sufficient to reach the low steamline pressure setpoint due to the rate sensitive nature of the circuitry.

During this event, approximately 2000 gallons of water were injected into the Reactor Coolant System and primary pressure increased to approximately 2340 psig. One Centrifugal Charging Pump was secured during this event to limit this pressure increase. Nevertheless, the pressure reached the setpoint of the Power Operated Relief Valves (PORV) and both PORV's did lift.

This event is also discussed in Licensee Event Report 85-021-00.



KANSAS GAS AND ELECTRIC COMPANY



GLENN L KOESTER
VICE PRESIDENT - NUCLEAR

February 28, 1986

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Mr. R. B. Minogue, Director
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KMLNRC 86-035

Re: Docket No. STN 50-482

Subj: Annual Operating Report for Wolf Creek Generating Station

Gentlemen:

The attached Annual Operating Report is being submitted pursuant to Wolf Creek Generating Station Technical Specifications 6.9.1.4 and 6.9.1.5. This report covers operations for the period of March 11, 1985, to December 31, 1985.

Yours very truly,

Glenn L. Koester
Vice President - Nuclear

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Enclosure

xc: PO'Connor (2), w/a
JCummins, w/a

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